Back to Contents

Summary of GIF Comments on
Evaluation Methodology

GIF Policy and Experts Meeting: London
February 18-19, 2002

Comment Categories

1. Method and Application
2. Criteria and Metrics
3. Editorial

1. Method and Application Comments

- *Use of ALWR as a Reference*
- *Relative state of system maturity*
- *Combination of Scores and Distributions*
- *Cost/Benefit*
- *Weighting*
- *Consistency and Bias*

Use of ALWR as Reference

- *Is this a good reference?*
- *Discussion:*
  - *Reference is primarily an ALWR (Generation III) with once through fuel cycle*
    - *Cost data was updated as shown in Appendix 2*
    - *This reference sets baseline for Gen IV to go beyond most modern deployed plants*
  - *International data from NEA was used for recent plant costs*
  - *Believed to be most objective reference*

Relative State of System Maturity

- *Mature systems may be rated more conservatively*
- *Discussion:*
  - *Method encourages TWGs to treat system potential optimistically*
  - *Cautions against bias for less developed systems*
  - *Will be discovered in consistency checks*

Combination of Scores and Distributions

- *Criteria/Metrics not completely independent*
- *Discussion:*
  - *Since goals were given as discrete, it was decided to treat them as independent*
  - *The objective is to find a figure of merit that maintains information about the uncertainity*
  - *Treatment as independent does result in smaller distributions when scores are added*
  - *Effect is similar for all systems*
  - *Purpose is to discriminate not to characterize*

Cost/Benefit

- *Economic evaluations don't allow offsetting of costs with perceived benefits*
- *Discussion:*
  - *Benefits are captured by criteria/metrics in other sections*
  - *Economic quantification of benefits would be a significant additional effort*

Weighting

- *Care should be used in establishing weights*
- *Discussion:*
  - *Individual criteria/metric weights established by EMG (modified by TWG comments)*
  - *Equal weights were specified for Goals*
  - *Goal weights are policy judgments and should only be established by project leadership*

Criteria Weighting: SU-1 and SU-2

Sustainability-1: Resource utilization		
SU1-1	***Fuel utilization***	***1***
Sustainability-2: Waste minimization and management		
SU2-1	***Waste minimization***	
	Mass of waste	***0.2***
	Volume of waste	***0.2***
	Long-term heat output	***0.2***
	Long-lived radiotoxicity	***0.2***
SU2-2	***Environmental impact***	***0.2***

The relative importance of the criteria varies with national perspective and system concept priorities. A default of equal weighting for each of the five metrics is adopted at this stage of the evaluation.

Criteria Weighting: SU-3

Sustainability-3: Proliferation resistance

SU3-1	***Separated Materials***	***0.4***
	Spent fuel characteristics	***0.4***
SU3-2	***Passive resistance to sabotage***	***0.2***

The characteristics of fresh fuel (SU3-1.1) and spent fuel (SU3-1.2) are considered equally important: both increase the time and difficulty of nation-state diversion, and both contribute to increasing the difficulty of subnational theft (SU3-2).

Criteria Weighting: SR-1 and SR-2

Safety and Reliability-1:

SR1-1	Reliability	0.6
SR1-2	Worker safety - routine exposures	0.2
SR1-3	Worker safety - accidents	0.2

Safety and Reliability-2:

SR2-1	Robust safety features	
	Reliable reactivity control	0.2
	Reliable heat removal	0.2
SR2-2	Models with well characterized uncertainty	
	Dominant phenomena models have low uncertainty	0.2
	Long fuel thermal response time	0.2
	Integral experiments scalability	0.2

Criteria Weighting: SR-3

Safety and Reliability-3:

SR3-1	*Source term*	*0.25*
	Mechanisms for energy release	*0.25*
SR3-2	*Robust mitigation*	
	Long system time constants	*0.25*
	Long and effective holdup	*0.25*

Criteria Weighting: EC-1 and EC-2

Economics-1:		
EC1-1	***Overnight construction cost***	***0.6***
EC1-2	***Low production costs***	***0.4***
Economics-2:		
EC2-1	***Short construction duration***	***0.25***
EC2-2	***Low capital at risk***	***0.25***
EC2-3	***High Profitability***	***0.5***

Consistency/Bias

- *Inconsistent application could result in biased scoring of systems*
- *Discussion:*
  - *EMG assists in interpreting criteria/metrics*
  - *CGs look for consistency across TWGs*
  - *RIT leading TWG co-chairs in consistency checks*

2. Criteria and Metrics Comments

- *Proliferation Resistance*
- *Economics*

Proliferation Resistance

- *Evaluations are inadequate*
- *Use TOPS Report*
- *Include cost of safeguards in R&D Costs*
- *Discussion:*
  - *EMG will examine current criteria in addressing GIF comments and consistency of evaluations*
  - *TOPS Report was one input*
  - *Improvement in metrics anticipated for future evaluation phases*

Economics

- *Base metric on Profitability only*
- *Use lower discount rate*
- *Consider marketability of systems*
- *Discussion:*
  - *Goals require more than Profitability*
  - *Future profitability and marketability analyses entail more uncertainties than cost*
  - *Discount rate varies by country and region*

3. Editorial Comments

- *Clarity*
- *Discussion:*
  - *EMG authors will improve the clarity of the document to the best of our abilities*